$$+\frac{317}{22809600}\triangle^8 - \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\Big).$$

These are the expressions to be used in computing the values of the integrals $\int ydx$ and $\int\int ydx^2$. It must be noticed that $\triangle^{-1}$ virtually contains an arbitrary constant C, and $\triangle^{-2}$ an arbitrary expression $Cx + C'$. In fact the quantities in the columns to the left of that of the function y cannot be written until we know one quantity in each column. These constants C and C' are usually determined from the given values of $\int ydx$ and $\int\int ydx^2$ for $x = a$. If we denote them by D_0^{-1} and D_0^{-2} and if in general the subscript $(_0)$ denote values which obtain when $x = a$, it will be seen that

$$\triangle_0^{-1} = \frac{D_0^{-1}}{h} + \frac{1}{12}\triangle_0 - \frac{11}{720}\triangle_0^3 + \ldots\ldots$$

$$\triangle_0^{-2} = \frac{D_0^{-2}}{h^2} - \frac{1}{12}\triangle_0^0 + \frac{1}{240}\triangle_0^2 - \ldots\ldots$$

Having thus the sum and difference of the quantities $\triangle^{-1}y_{-\frac{1}{2}}$ and $\triangle^{-1}y_{\frac{1}{2}}$, it will be easy to get the quantities themselves.

In using the method of mechanical quadratures it is usual to multiply the values of y by h, if the single integral only is wanted, but by h^2 if the double is also to be obtained; in the last case then it is necessary to divide the results obtained by h in order to have the single integral.

These formulae appear to have been first obtained by Gauss (*Werke*, Vol. III, p. 328). Encke has given them in the Berlin *Jahrbuch* for 1838. For use they are much superior to the formula given by Laplace (*Mecanique Celeste*, Vol. IV, p. 207).

PROBLEM IN "CURVES OF PURSUIT," BY WERNER STILLE, MARINE, ILL.—A hunter is in the field with his dog. The hunter, standing at a point A *calls* his dog, which is at a point B. At this moment the hunter walks off in a direction right-angular to AB, while the dog, running n times as fast as his master walks, keeps his master continually in view, thus at each moment running along the right line which then lies between him and his master.

Find thn Curve along which the dog runs until he overtakes his master at C.